

MPE Evaluation

Applicant: Aurodi Corporation

FCC ID: 2BBTA-VTS14W1X

Model: VTS14W11

MPE Evaluation

RF Exposure Compliance Requirement

Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06 and FCC 1.1310 Radio frequency radiation exposure limits for General Population/Uncontrolled Exposure.

Limit For Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	< 6
3.0-30	1824/f	4.89/f	*(900/f ²)	< 6
30-300	61.4	0.163	1.0	< 6
300-1500	/	/	f/300	< 6
1500-100,000	/	/	5	< 6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	< 30
1.34-30	824/f	2.19/f	*(180/f ²)	< 30
30-300	27.5	0.073	0.2	< 30
300-1500	/	/	f/1500	< 30
1500-100,000	/	/	1.0	< 30
Note: f = frequency in MHz. * = Plane-wave equivalent power density.				

EUT RF Exposure

$$P_d = PG/4\pi R^2$$

P_d = power density in mW/cm^2

P = output power to antenna in mW

G = gain of antenna in linear scale

$\pi=3.14$

R = distance between observation point and center of the radiator in cm

905-925MHz Lora mode

The Max Output Power is 10.62 dBm in 905 MHz;

Antenna gain: -1.90 dBi, gain of antenna in linear scale: 0.64

$R=20\text{cm}$

$$P_d = PG/(4\pi R^2) = 0.00148 \text{ mW}/\text{cm}^2 < 1 (\text{limits}) \text{ mW}/\text{cm}^2$$

NFC mode

Maximum Electric field strength: 58.57 dBuV/m @ 13.56MHz

The Maximum EIRP = 58.57 dBuV/m - 95.2 = -36.63 dBm = 217.27nW = 0.000217mW < 1mW

Antenna gain: 0 dBi, gain of antenna in linear scale: 1

$R=20\text{cm}$

$$P_d = PG/(4\pi R^2) = 0.0000000432 \text{ mW}/\text{cm}^2 < (\text{limits}) 1 \text{ mW}/\text{cm}^2$$

So the transmitter complies with the RF exposure requirements and the SAR is not required.

Simultaneous Transmission Calculation (Worst-case mode)

No.	Transmitter Combination	MPE Ratio	Limit	Result
1	905-925MHz Lora + NFC	0.001480432	≤ 1.0	Pass

Note: MPE Ratio = 0.00148+0.0000000432 = 0.001480432

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